



NASA's Space Launch System: Momentum Builds Towards First Launch

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Space Launch System



The Journey to Mars



EARTH RELIANT

MISSION: 6 TO 12 MONTHS
RETURN TO EARTH: HOURS

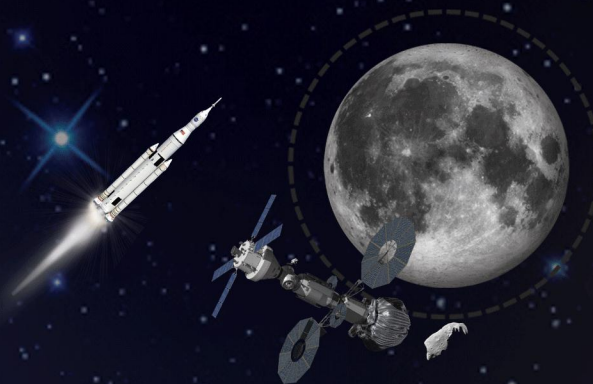


Mastering fundamentals
aboard the International
Space Station

U.S. companies
provide access to
low-Earth orbit

PROVING GROUND

MISSION: 1 TO 12 MONTHS
RETURN TO EARTH: DAYS



Expanding capabilities by
visiting an asteroid redirected
to a lunar distant retrograde orbit

The next step: traveling beyond low-Earth
orbit with the Space Launch System
rocket and Orion spacecraft

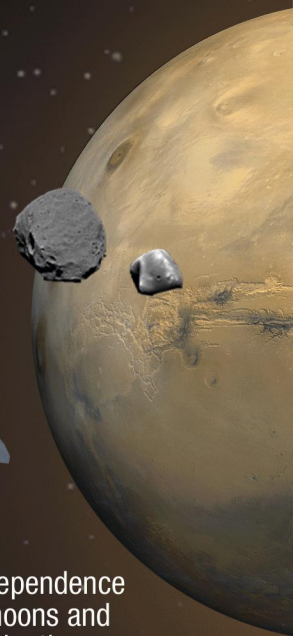


MARS READY

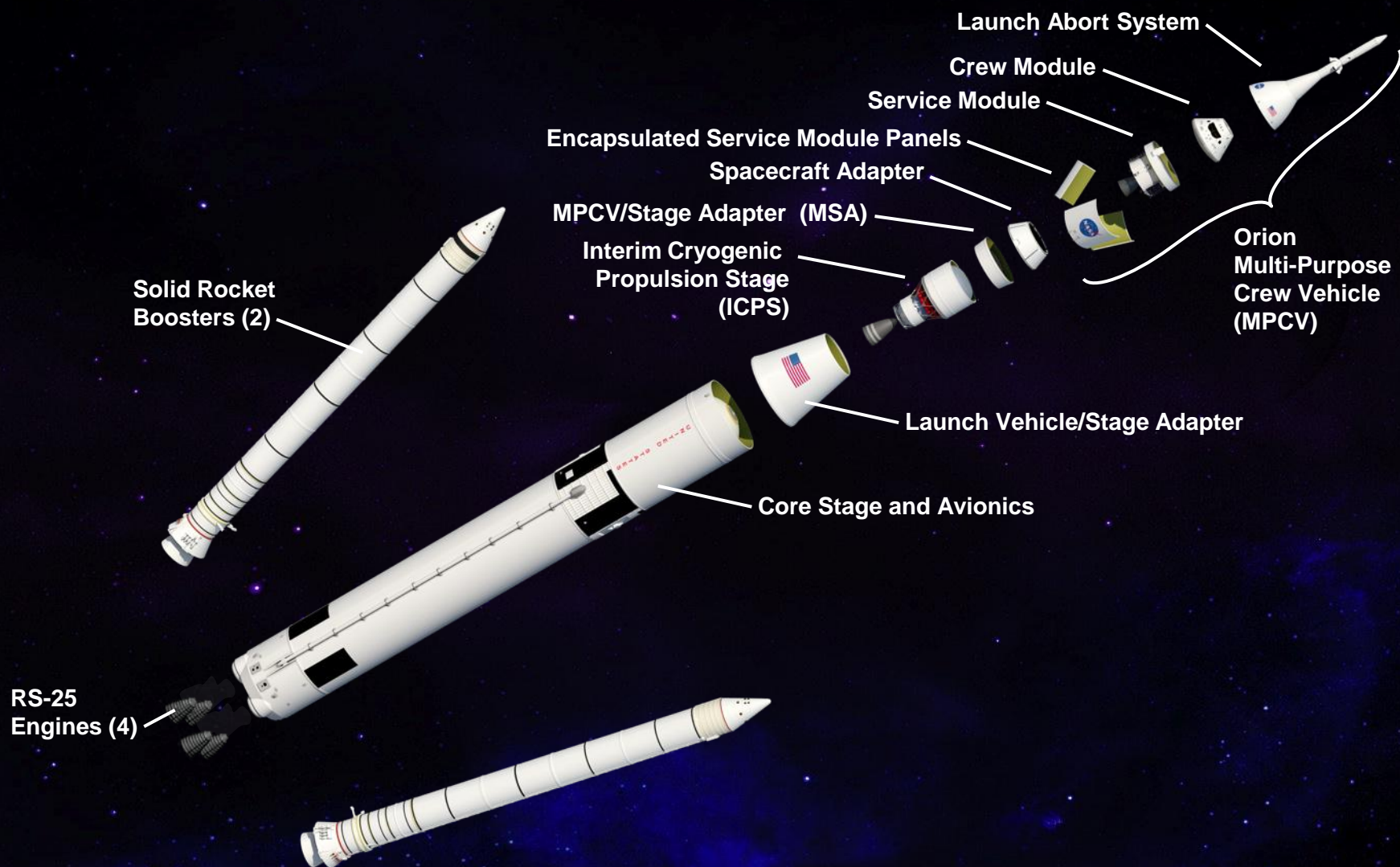
MISSION: 2 TO 3 YEARS
RETURN TO EARTH: MONTHS



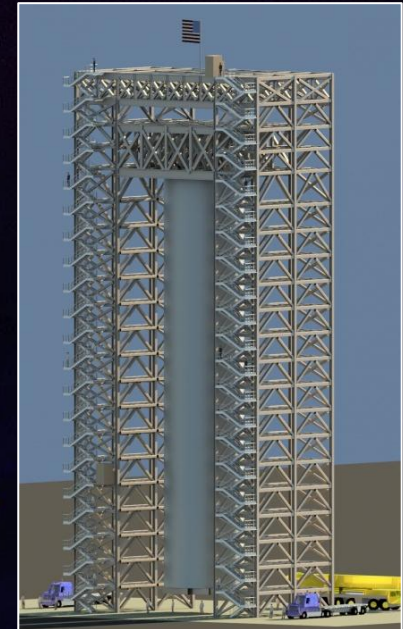
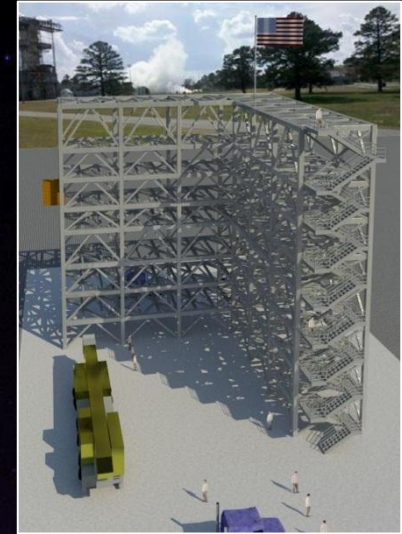
Developing planetary independence
by exploring Mars, its moons and
other deep space destinations



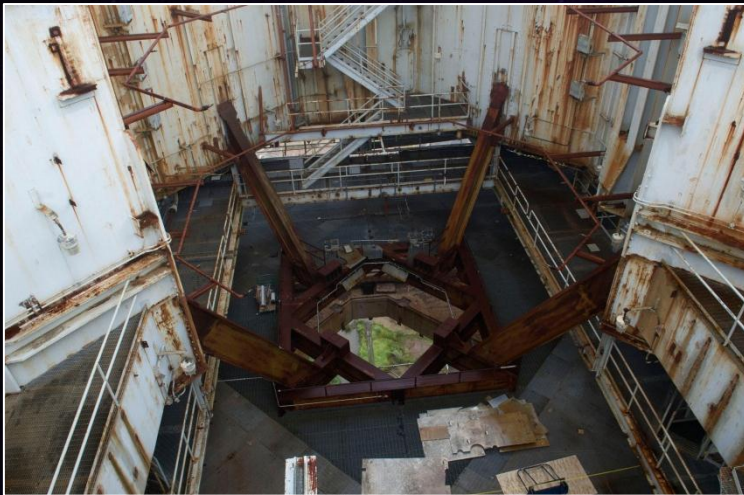
SLS Block 1 70t vehicle



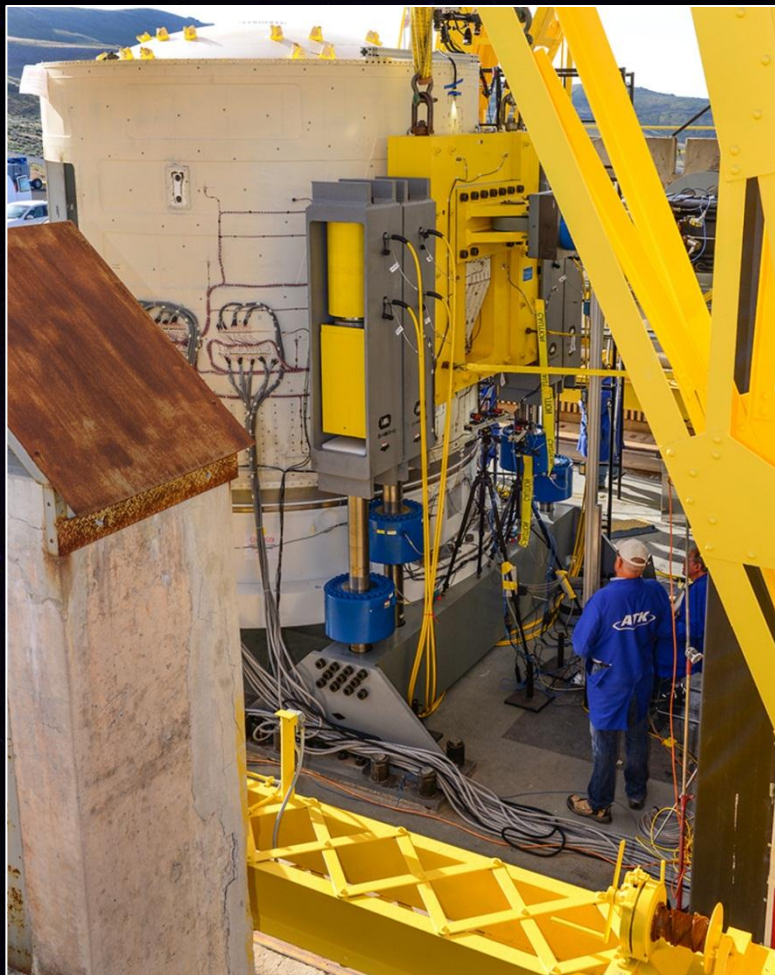
Payload Adapter, Stages



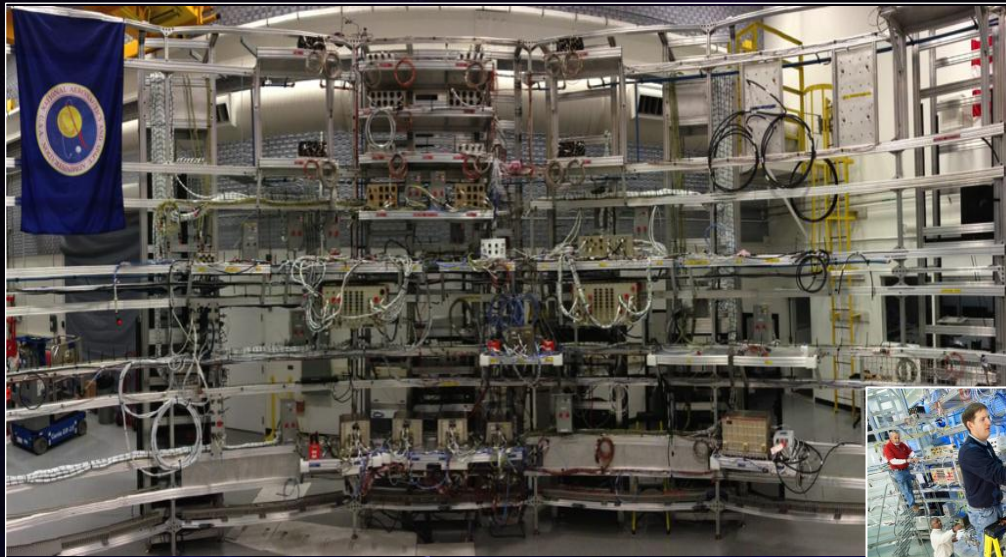
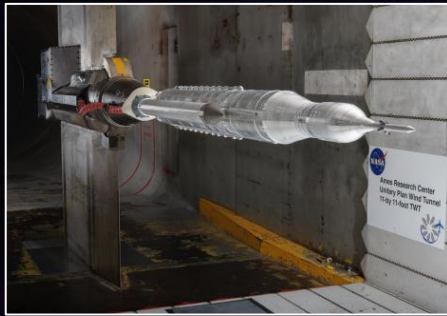
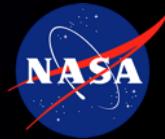
RS-25 Engine, Stage Testing



Solid Rocket Boosters



Systems Engineering and Integration



SLS Milestones Schedule



2011	2012	2013	2014	2015	2016	2017-18
MCR	SRR/SDR	PDR	KDP-C	CDR	SIR	EM-1 FRR Launch Availability
Formulation			Implementation			
<p>SLS Design Chosen</p> <p>Booster Development Test</p>	<p>Engines Delivered to Inventory</p> <p>Wind Tunnel Testing</p>	<p>Manufacturing Tooling Installation</p> <p>Production of First New Flight Hardware</p>	<p>Main Engine Test-Firing</p> <p>ICPS Production Begins</p> <p>Orion Flight Test</p> <p>STA Production Begins</p>	<p>Core Stage Assembly</p> <p>Booster Qualification Tests</p>	<p>Core Stage Structure Testing</p> <p>Booster Assembly at KSC</p> <p>Core Stage Test-Firing</p>	<p>Vehicle Stacking at KSC</p> <p>Internal Launch Readiness</p>
Concept Studies	Concept & Technology Development	Preliminary Design & Technology Completion	Final Design & Fabrication		System Assembly, Integration & Test, Launch & Checkout	

MCR: Mission Concept Review

CDR: Critical Design Review

SRR: System Requirements Review

SIR: System Integration Review

SDR: System Definition Review

FRR: Flight Readiness Review

PDR: Preliminary Design Review

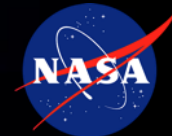
PLAR: Post-Launch Asses. Review

Rolling Toward First Launch

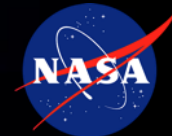




BACKUP



Revolutionary Evolution

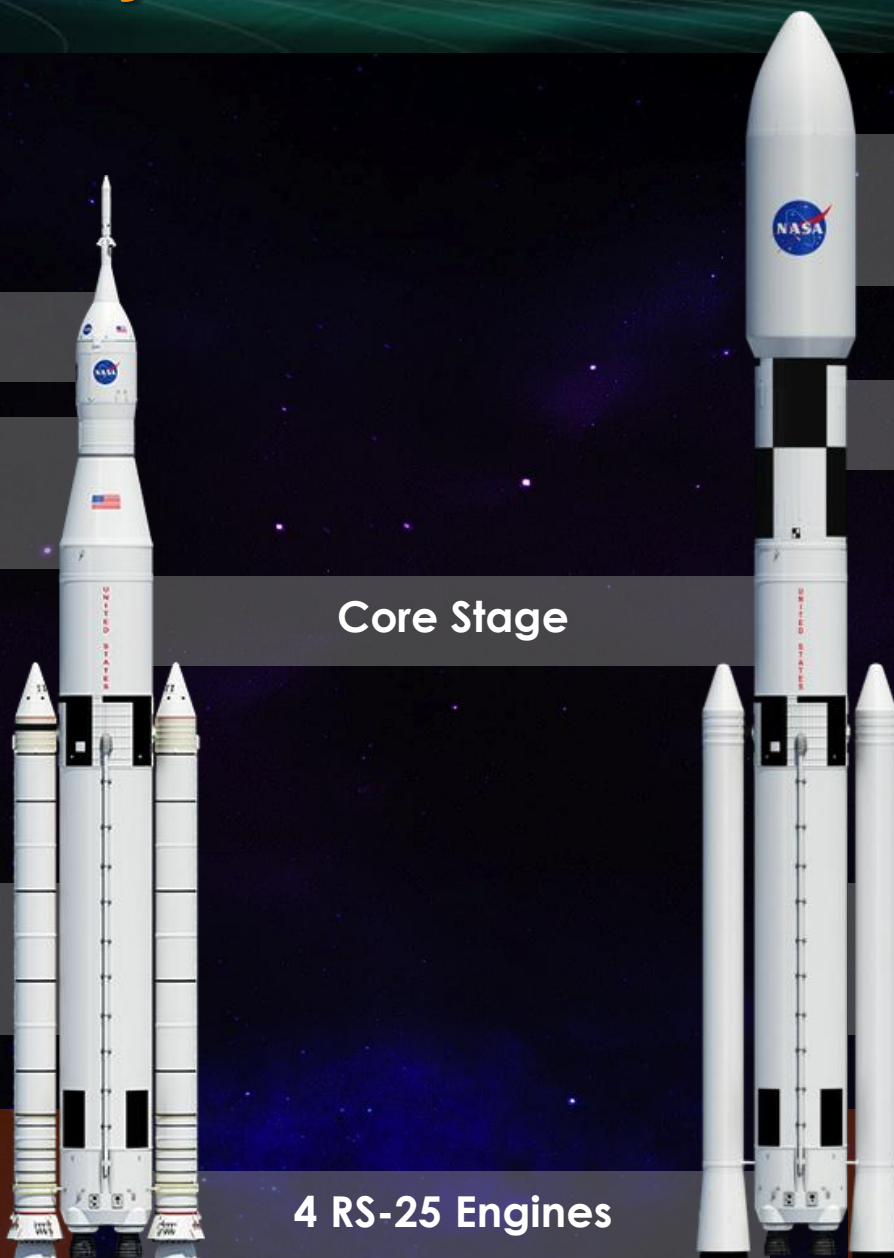


Orion

Interim Cryogenic
Propulsion Stage

Five-Segment Solid
Rocket Boosters

Block I
70 metric tons



Core Stage

4 RS-25 Engines

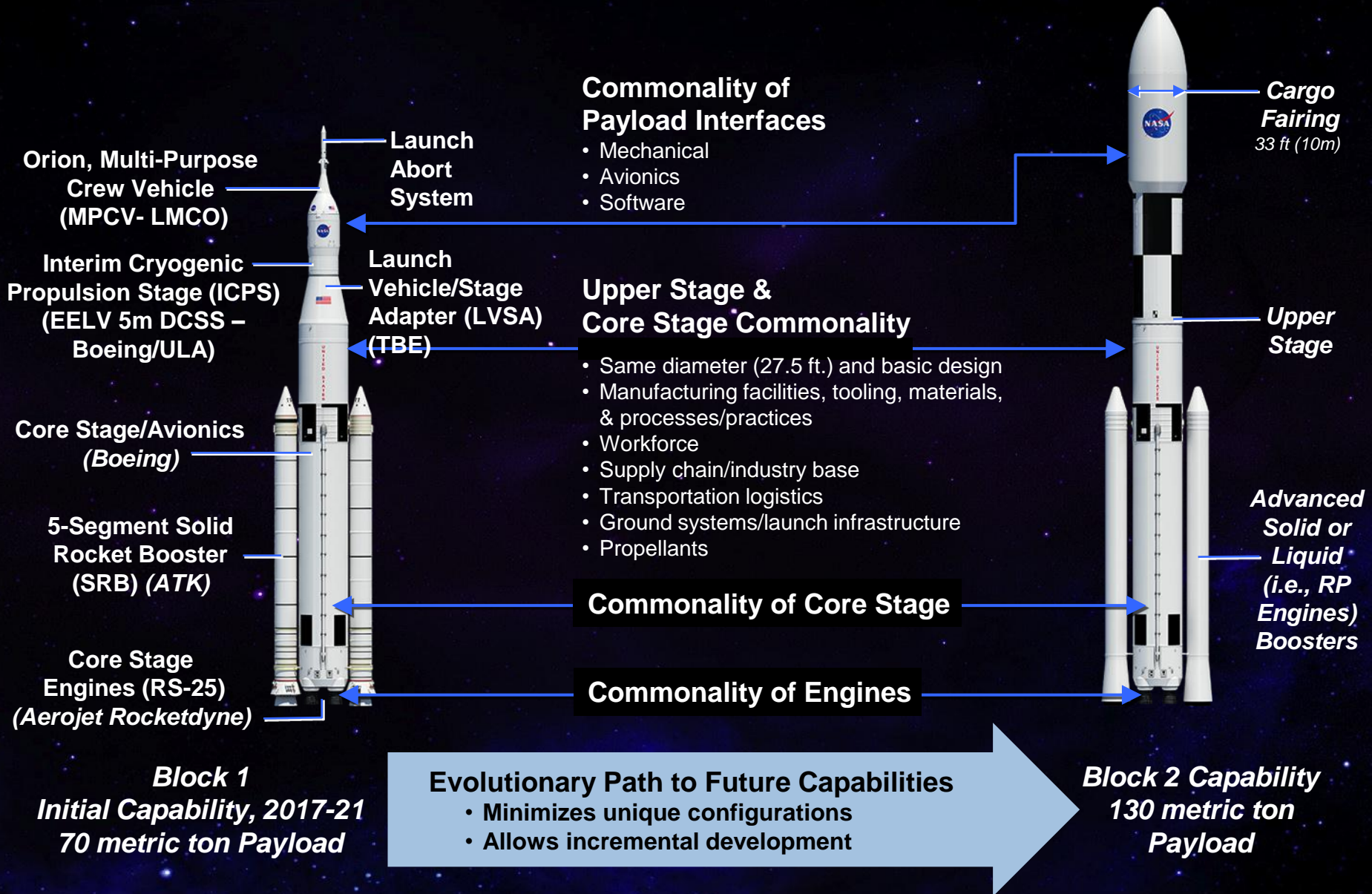
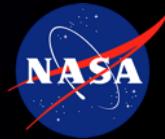
5, 8.4 or 10 Meter
Payload Fairings

Upper Stage

Liquid or Solid
Advanced Boosters

Block II
130 metric tons

Evolving Capability



EM-1 Mission Overview: Uncrewed Distant Retrograde Orbit



Total Mission Duration: 25-26 days

